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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,755	08/09/2006	Yoshiaki Sonobe	Q9-473	6031
23373 7590 04/17/2009 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER				
HARRIS, GARY D				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
04/17/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,755

Applicant(s)

SONOBE ET AL.

Examiner

GARY D. HARRIS

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1.5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1.5 and 6 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12/24/2008 have been fully considered but they are not persuasive. Applicant argues that Kikitsu does not address 400Gbit/inch² or the excellent thermal stability but, this is not claimed by applicant. Additionally, applicant argues that the Kikitsu et al. reference does not teach an oxide within the ferromagnetic layer. Examiner agrees with respect to the naming of the layers (i.e. recording and magnetic layers). However, giving the broadest reasonable interpretation of Kikitsu it is although the naming and/or function of the layers may be different, the actual order of the layers as claimed (using comprising language) does not necessarily overcome the reference as claims are currently amended. Applicant further argues that the soft magnetic layer in Kikitsu is not an iron or cobalt based material. However, as disclosed in example 9 of Kikitsu, the soft magnetic underlayer are made of an FeTaC and would meet the limitations of claim (Col. 55, Line 5-17). A comparison of structures follows:

Applicant	Kikitsu et al. '364
CoPt, CoPd, FePt, FePd Layer	CoPt, CoPd, FePt, FePd (Col. 43, 44, Line 46-67, 1-16 respectively).
Ferromagnetic layer w/6 % SiO ₂	(Col. 8, 9 Line 49-67, 1-13 respectively)
Soft Magnetic Layer w/ Fe or Co	Soft Magnetic Layer w/Fe (Col. 55, Line 5-17).
Substrate	Substrate (Col. 8, Line 45-48).

Applicant's addition of a Pt or Pd spacer layer between the two magnetic layers is found in the Kikitsu '364 in col. 35, lines 5 - 41.

Claims 1, 5 & 6 are examined in the instant application.

Specification

Claim 1 is objected to because of the following informalities: A misspelled word occurs in claim 1, Line 5 (gains, should be grains). Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5 & 6 are rejected under 35 U.S.C. 103(a) as obvious over Kikitsu et al. US 6,830,824.

As to Claim 1 & 6, Kikitsu et al. US 6,830,824 discloses a recording medium and method of producing, having perpendicular anisotropy utilizing Cobalt and/or iron based alloys, the use of noble metals including Co/Pt and Co/Pd and Si with oxygen which would produce a granular material (Col. 8, 9 Line 49-67, 1-13 respectively) and discloses an atomic ratio of SiO₂ (2.65 g/cm³) to Cobalt (8.9 g/cm³) of 45 & 50 volume percent (Col. 48, Line 38-41) but does not disclose the atomic percent of Silica. Examiner interprets that the weight percent of SiO₂ would be 6 atomic percent or more as Kikitsu et al. '824 discloses a volume percentage of near 50 percent. Assuming 1 cm³

$$0.50 \times 2.65 / (2.65 + 8.9) = 11 \% \text{ SiO}_2$$

$$0.45 \times 2.65 / (2.65 + 8.9) = 10\% \text{ SiO}_2$$

Kikitsu changes the SiO_2 via volume percentages which would result in a weight percentage change (depending on the specific density of the materials). Regardless, it would have been obvious to optimize the weight percent of SiO_2 as Kikitsu changes the volume percent which would indicate a change in atomic percentages as illustrated above, it would have been obvious as this would be a results effective variable MPEP 2144.05 that would be optimized by one of ordinary skill in the art through routine experimentation in adjusting magnetic granular materials.

A comparison of structures follows:

Applicant	Kikitsu et al. '364
CoPt, CoPd, FePt, FePd Layer	CoPt, CoPd, FePt, FePd (Col. 43, 44, Line 46-67, 1-16 respectively).
Ferromagnetic layer w/6 % SiO2	(Col. 8, 9 Line 49-67, 1-13 respectively)
Soft Magnetic Layer w/ Fe or Co	Soft Magnetic Layer w/Fe (Col. 55, Line 5-17).
Substrate	Substrate (Col. 8, Line 45-48).

Additionally Kikitsu et al. '824 utilizes soft magnetic layers (Col. 9, Line 46-62).

As disclosed in example 9 of Kikitsu, the soft magnetic underlayer are made of an FeTaC and would meet the limitations of claim (Col. 55, Line 5-17).

The process limitation of using argon in the sputtering chamber is also noted. However, it would have been obvious as this would be a results effective variable MPEP 2144.05 that would be optimized by one of ordinary skill in the art through routine experimentation to control atmospheric conditions.

As to Claim 5, Kikitsu et al. US 6,830,824 discloses CoCrPt, FePt, CoPt and alloys thereof (Col. 8-9, Line 49-67, 1-13 respectively) and the use of noble metal layers

(applicant's spacer layers) including Co/Pt and Co/Pd in a multilayer configuration (Col. 8, 9 Line 49-67, 1-13 respectively) and the addition of a Pt spacer layer is found in Col. 35, lines 5 – 41.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GARY D. HARRIS whose telephone number is (571)272-6508. The examiner can normally be reached on 8AM - 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Bernatz, acting SPE for Carol Chaney, can be reached on 571-272-1505. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Gary D. Harris/

Examiner, Art Unit 1794

/Kevin M Bernatz/

Acting SPE of Art Unit 1794

April 13, 2009